Hydrological Summary for Great Britain

NOVEMBER 1993

Rainfall

November was notably cold, in southern Britain especially, and sunshine totals were generally above average reflecting the dominance of anticyclonic conditions - these resulted in lengthy sequences of dry days although fog and mist continued to create a damp complexion in many areas. East Anglia - benefitting from the persistent easterlies off the North Sea - was the only region to register above average rainfall. Parts of northern Scotland were exceptionally dry and monthly totals of less than half the 1961-90 average also characterised north-western and some central districts of England, where the fortnight following a wet interlude around the 12th to 14th was virtually rainless. Over large areas, rainfall since the early summer has been decidedly episodic with alternating wet and dry episodes of around six weeks. However, the August-November period is the driest for twenty years in some parts of western Scotland; this short term deficiency contrasts pointedly with the abundant precipitation which has typified most of the last six years. The recent return of active Atlantic frontal systems will be especially welcome in the Fort William area where depressed reservoir (HEP) storage in November led to a quarter of British Alcan's workforce being laid off. For the year thus far, rainfall totals are above average in the English lowlands and the long term deficiencies have been greatly reduced over the period since June 1992; in this timeframe rainfall in some eastern districts is around 30% above average.

River Flow

Contrary to the normal seasonal variation, monthly runoff rates generally declined relative to October. In the eastern lowlands of England flows held up well even where rainfall was significantly below average - a consequence of the much enhanced baseflows resulting from heavy early autumn groundwater replenishment. Very healthy groundwater contributions resulted in a new maximum November runoff total for the Mimram (in a 41-year record) and near-record totals on the Lud and Little Ouse. To the west and north, however, flow recessions - though commonly interrupted in the second week of November by minor spates - were generally steep and mean flows for the month were substantially below average. Catchments registering new November minima showed a wide distribution in northern Britain. The River Ewe (Highland Region) recorded its lowest November runoff in a series from 1967 and many rivers draining from the Highlands registered depressed runoff rates - most notably the Tay, Britain's biggest river in flow terms, registered a new November minimum in a 42-year record. November mean flows were also close to the recorded minima in parts of north-western England, where runoff for the Eden was unprecedented in a series from 1967, and in north Wales. Runoff totals for the autumn testify to a moderation in the NW/SE runoff gradient across Britain - a remarkable turnaround relative to runoff patterns during most of the 1988-92 period. Despite the recent volatility, accumulated runoff totals for the last twelve months are generally well within the normal range throughout Great Britain.

Groundwater

Groundwater levels continue to rise, albeit less steeply than hitherto, throughout the Chalk but the other aquifers present a less spatially coherent picture; downturns during November were reported in a number of western aquifers - especially where fissuring encourages a rapid response to rainfall variations. In the Chalk, reported levels in November generally reflect heavy recharge up to mid-October rather than the subsequent dry spell (a consequence of the lag between infiltration and water-table responses). Late-autumn levels are close to, or above, average in all index wells. This is also true of the Lincolnshire Limestone and the Jurassic Limestones of the Cotswolds. Monitoring boreholes in the Permo-Triassic show a less healthy picture with depressed levels still found in, and to the north of, a belt from the lower Trent Valley to Shropshire. Despite a recent upturn, November levels were below the seasonal minimum at Llanfair DC and close to it at Redbank (Scotland). However, with soils currently close to saturation, the coming four months should present plenty of opportunities for further recharge.

General

The late autumn saw a temporary halt to the recovery of reservoir stocks in much of western Britain. However, even modest winter rainfall should ensure capacity storage by the early spring. In the east, storages are already very healthy but the 1994 outlook will depend rather more on replenishment being maintained into next spring.

Institute of Hydrology

British Geological Survey

Data for this report have been provided principally by the regional divisions of the National Rivers Authority* in England and Wales, the River Purification Boards in Scotland and by the Meteorological Office. Reservoir contents information has been supplied by the Water Services Companies, the NRA or, in Scotland, the Lothians Regional Council. The most recent areal rainfall figures are derived from a restricted network of raingauges (particularly in Scotland) and a proportion of the river flow data is of a provisional nature.

A map (Figure 3) is provided to assist in the location of the principal monitoring sites.

Financial support towards the production of the Hydrological Summaries is given by the Department of the Environment and the National Rivers Authority.

The Hydrological Summaries are available on annual subscription at a current cost of £48 per year - enquiries should be directed to the National Water Archive Office at the address below. No charge is made to those organisations providing data for the Summaries.

* For reasons of consistency, the original ten regional divisions of the NRA have been retained for use in the Hydrological Summaries.

MORECS

The recent monthly regional rainfall data featured in the Hydrological Summaries are MORECS assessments. MORECS is the generic name for The Meteorological Office services involving the calculation of evaporation and soil moisture routinely for Great Britain. Products include a weekly issue of maps and tables of potential and actual evaporation, soil moisture deficits, effective rainfall and the hydrometeorological variables used to calculate them. The data are used to provide values for 40 km squares - or larger areas - and various sets of maps and tables are available according to user requirements. Options include a day-by-day retrospective calculation of soil moisture at any of 4000 rain-gauge sites.

Further information about MORECS services may be obtained from: The Meteorological Office, Sutton House, London Road, Bracknell, RG12 2SY

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 13 December 1993

TABLE 1 1992/93 RAINFALL AS A PERCENTAGE OF THE 1961-90 AVERAGE

		Nov 1992	Dec	Jan 1993	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
England and	mm	138	83	113	16	26	94	86	68	80	54	110	102	80
Wales	%	153	88	128	25	36	157	134	105	129	71	143	120	88
NRA REGIONS														
North West	mm	172	118	162	18	38	123	131	69	99	75	86	64	66
	%	140	95	134	23	40	173	175	85	116	70	75	50	54
Northumbria	mm	100	71	107	16	25	123	118	38	57	76	108	84	69
	%	116	88	127	27	36	220	190	63	88	94	148	110	80
Severn-Trent	mm	113	61	82	9	16	79	84	75	77	44	96	74	63
	%	159	79	117	17	26	144	142	127	145	66	150	116	88
Yorkshire	mm	102	71	91	19	15	102	82	49	67	78	133	74	65
	%	128	86	115	33	22	173	137	82	114	105	196	101	82
Anglian	mm	83	41	57	17	17	71	52	49	69	46	105	88	65
	%	143	75	114	46	36	154	108	96	141	84	214	172	112
Thames	mm	117	58	86	7	25	83	61	57	56	33	102	114	45
	%	180	83	134	16	45	166	109	104	114	57	173	183	70
Southern	mm	141	76	95	9	31	91	58	53	62	37	123	137	56
	%	166	93	119	17	49	172	107	98	129	65	178	172	66
Wessex	mm	152	86	119	9	40	83	62	69	67	37	119	122	63
	%	183	92	137	14	57	157	102	121	129	56	165	154	76
South West	mm	216	122	172	23	33	99	131	109	128	39	168	119	109
	%	173	88	125	23	33	143	182	158	186	46	181	102	87
Welsh	mm	214	145	193	24	35	112	124	97	101	74	118	81	103
	%	151	95	135	25	33	140	151	123	131	73	103	59	73
Scotland	mm	212	159	306	67	120	116	111	75	112	74	76	162	96
	%	140	105	203	66	96	153	129	87	119	63	54	104	63
RIVER PURIFICATION BOARDS														
Highland	mm	280	239	397	120	156	85	93	85	141	86	53	236	69
	%	138	121	211	94	96	93	101	87	133	68	31	119	34
North-East	mm	93	78	159	33	55	69	109	59	80	72	87	166	46
	%	94	84	161	51	71	115	158	89	110	83	100	171	46
Tay	mm	163	113	343	25	114	134	132	59	87	60	102	177	80
	%	135	89	238	26	105	216	159	81	113	64	89	136	66
Forth	mm	153	84	261	20	90	109	119	73	74	50	79	144	83
	%	137	76	221	25	96	185	161	106	99	53	72	125	74
Tweed	mm	135	82	161	16	43	124	130	62	54	52	90	110	65
	%	145	88	161	24	54	218	183	95	74	59	101	116	70
Solway	mm	203	133	216	29	101	165	139	70	101	67	101	73	92
	%	141	90	138	29	86	214	164	83	112	56	71	47	64
Clyde	mm	255	165	350	69	158	159	119	77	135	84	75	100	122
	%	142	92	185	58	107	189	131	83	124	63	42	52	68

Note: The monthly rainfall figures for October and November correspond to the MORECS areal assessments derived by The Meteorological Office. In northern Britain these initial assessments may have a wide error band associated with them. The provisional figures for England and Wales and for Scotland are derived using a different raingauge network. Regional areal rainfall figures are regularly updated (normally one or two months in arrears) using figures derived from a far denser raingauge network.

TABLE 2 RAINFALL RETURN PERIOD ESTIMATES

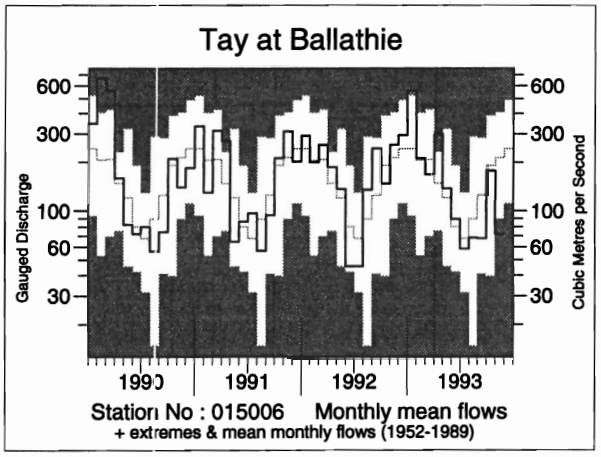
		Aug-Nov93	Est Return Period, years	Jan93-Nov93	Est Return Period, years	Jul92-Nov93	Est Return Period, years	Mar90-Nov93	Est Return Period, years
England and Wales	mm	345		828		1437		3130	
	% LTA	105	2-5	103	2-5	112	5-10	94	5-10
NRA REGIONS									
North West	mm	291		931		1682		4146	
	% LTA	62	20-30	86	5-10	96	2-5	92	5-10
Northumbria	mm	337		821		1330		3092	
	% LTA	107	2-5	106	2-5	108	2-5	97	2-5
Severn-Trent	mm	277		699		1226		2664	
	% LTA	104	2-5	103	2-5	114	5-15	95	2-5
Yorkshire	mm	350		775		1300		2833	
	% LTA	119	2-5	105	2-5	111	5-10	93	5-10
Anglian	mm	304		636		1091		2156	
	% LTA	143	15-25	118	5-10	127	60-90	96	2-5
Thames	mm	294		669		1195		2413	
	% LTA	121	2-5	108	2-5	122	10-30	94	2-5
Southern	mm	353		752		1304		2698	
	% LTA	121	2-5	108	2-5	117	5-15	93	5-10
Wessex	mm	340		789		1357		2864	
	% LTA	114	2-5	106	2-5	114	5-10	92	5-10
South West	mm	435		1130		1914		4090	
	% LTA	104	2-5	109	2-5	115	5-10	95	2-5
Welsh	mm	376		1062		1952		4517	
	% LTA	76	5-10	92	2-5	104	2-5	93	5-10
Scotland	mm	407		1314		2297		5892	
	% LTA	72	10-20	102	2-5	110	5-10	110	20-40
RIVER PURIFICATION BOARDS									
Highland	mm	443		1520		2758		7310	
	% LTA	63	30-50	97	2-5	108	2-5	112	40-60
North-East	mm	371		935		1502		3645	
	% LTA	100	2-5	106	2-5	106	2-5	100	2-5
Tay	mm	419		1313		2097		4941	
	% LTA	91	2-5	119	10-20	119	10-30	109	5-10
Forth	mm	356		1102		1828		4435	
	% LTA	83	2-5	110	2-5	113	5-15	107	5-10
Tweed	mm	317		907		1537		3730	
	% LTA	87	2-5	103	2-5	109	5-10	103	2-5
Solway	mm	334		1155		2078		5329	
	% LTA	59	30-50	91	2-5	100	2-5	101	2-5
Clyde	mm	380		1447		2606		7015	
	% LTA	55	80-120	95	2-5	105	2-5	111	20-40

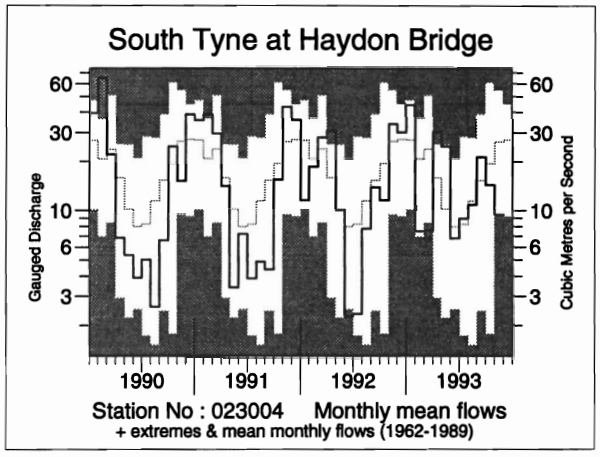
LTA refers to the period 1961-90.

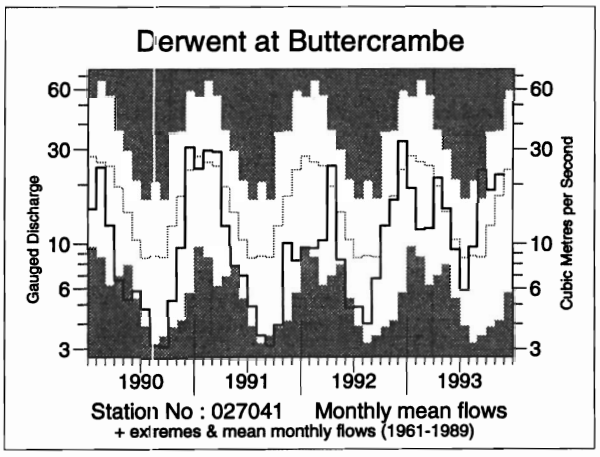
Return period assessments are based on tables provided by the Meteorological Office*. The tables reflect rainfall totals over the period 1911-70 only and the estimate assumes a sensibly stable climate. They assume a start in a specified month; return periods for a start in any month may be expected to be an order of magnitude less - for the longest durations the return period estimates converge. "Wet" return periods underlined.

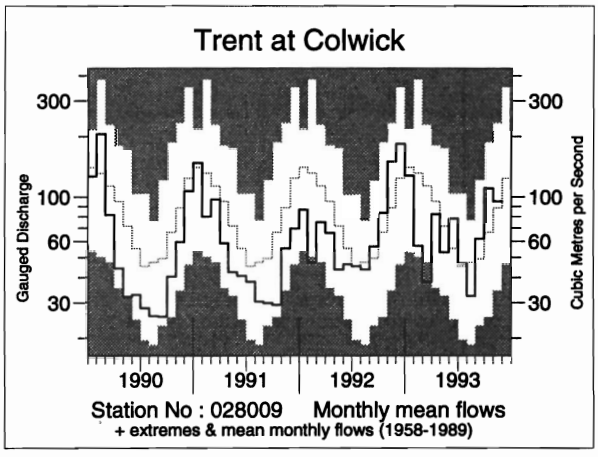
* Tabony, R.C., 1977, The Variability of long duration rainfall over Great Britain, Scientific Paper No. 37, Meteorological Office.

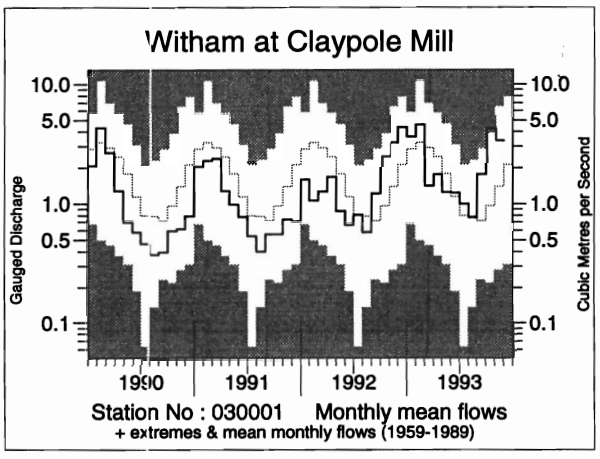
FIGURE 1 MONTHLY RIVER FLOW HYDROGRAPHS

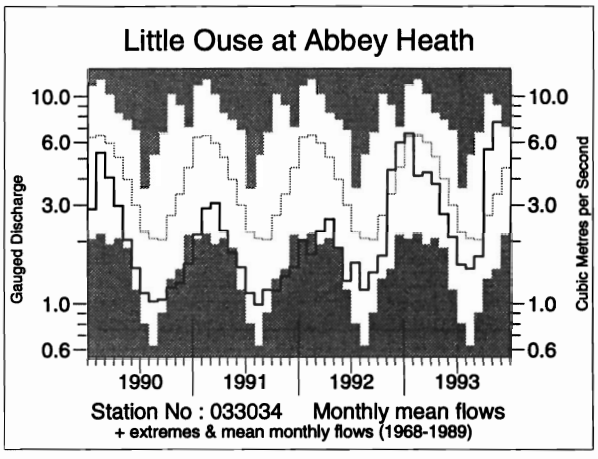


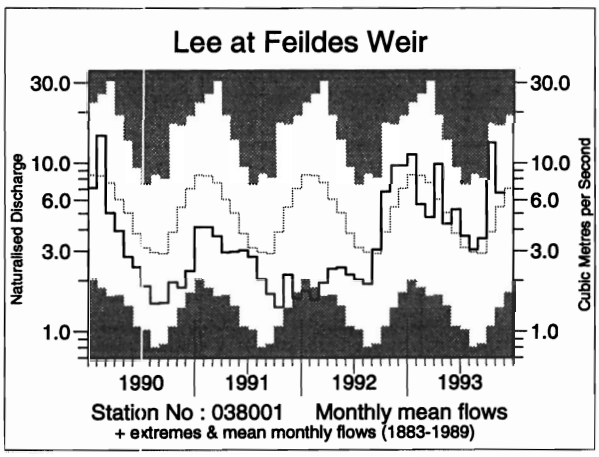


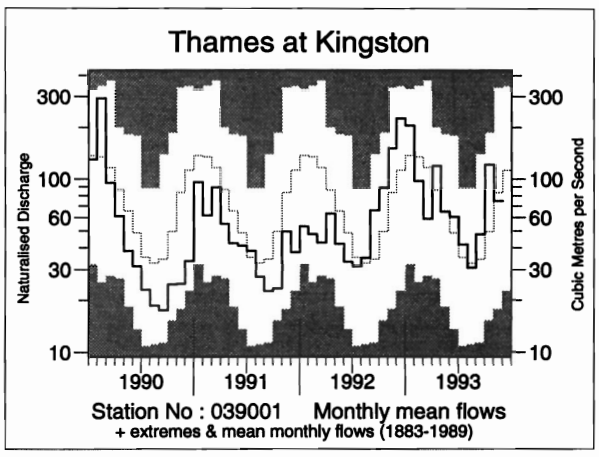


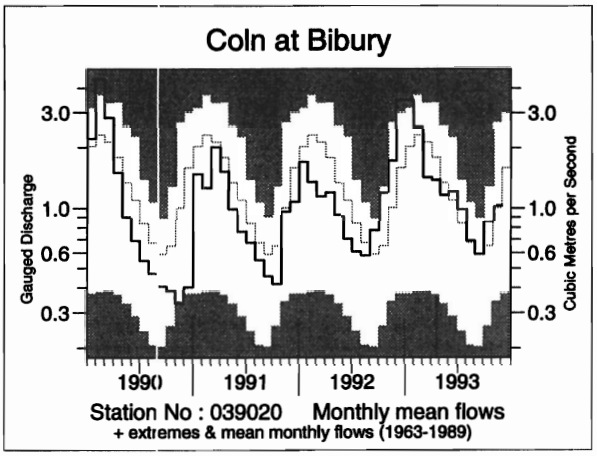


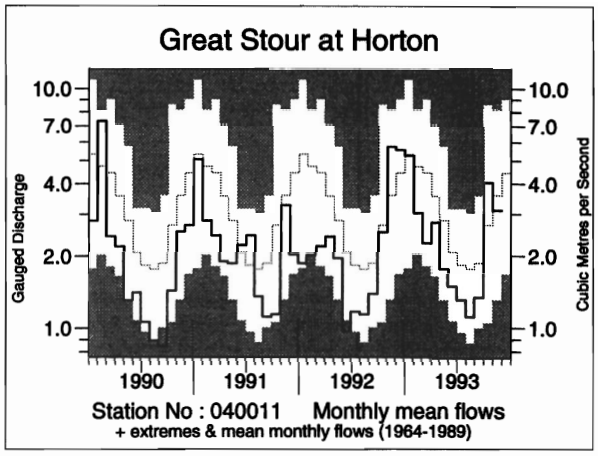


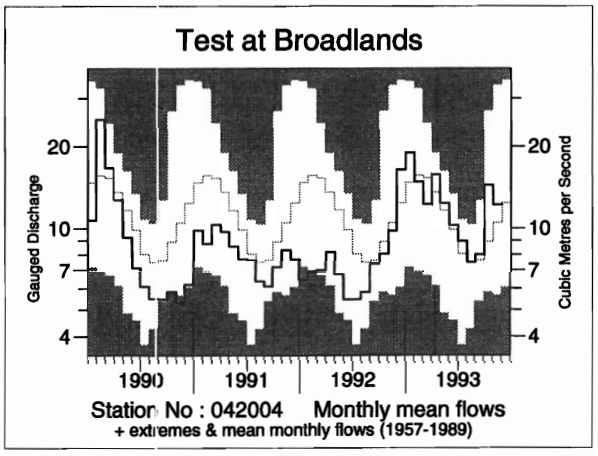


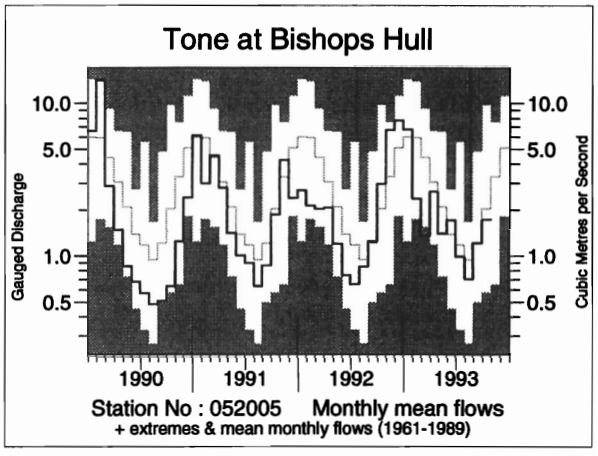


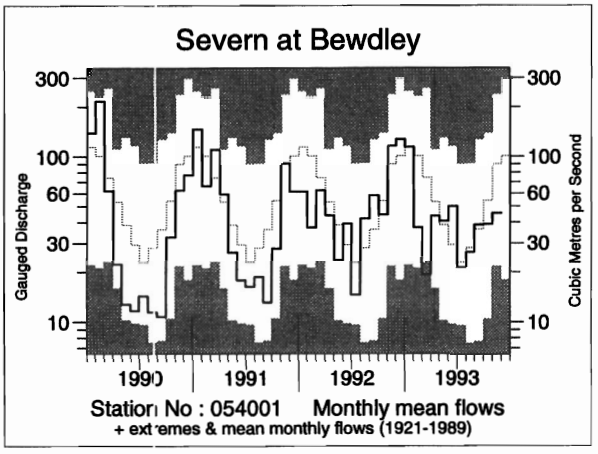


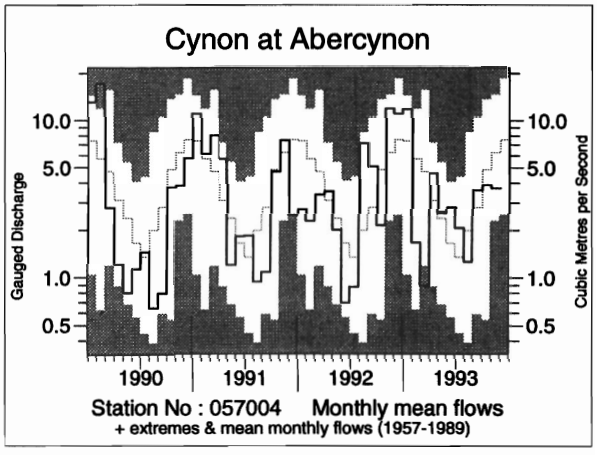

Coln at Bibury
Gauged Discharge
Cubic Metres per Second
3.0
1.0
0.6
0.3
1990
1991
1992
1993
Station No : 039020 Monthly mean flows
+ extremes & mean monthly flows (1963-1989)

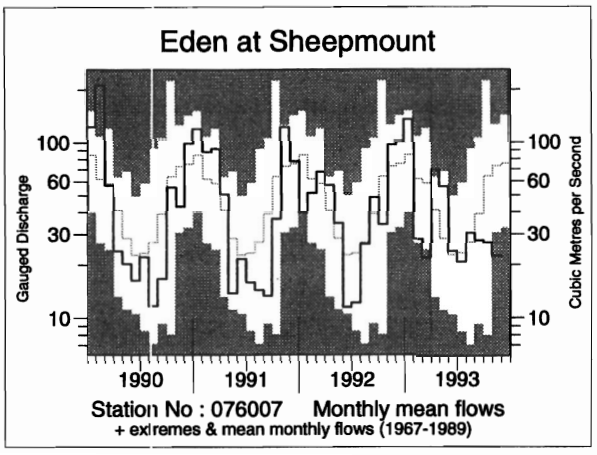

Great Stour at Horton
Gauged Discharge
Cubic Metres per Second
10.0
7.0
4.0
2.0
1.0
1990
1991
1992
1993
Station No : 040011 Monthly mean flows
+ extremes & mean monthly flows (1964-1989)


Test at Broadlands
Gauged Discharge
Cubic Metres per Second
20
10
7
4
1990
1991
1992
1993
Station No : 042004 Monthly mean flows
+ extremes & mean monthly flows (1957-1989)


Tone at Bishops Hull
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1990
1991
1992
1993
Station No : 052005 Monthly mean flows
+ extremes & mean monthly flows (1961-1989)


Severn at Bewdley
Gauged Discharge
Cubic Metres per Second
300
100
60
30
10
1990
1991
1992
1993
Station No : 054001 Monthly mean flows
+ extremes & mean monthly flows (1921-1989)


Cynon at Abercynon
Gauged Discharge
Cubic Metres per Second
10.0
5.0
1.0
0.5
1990
1991
1992
1993
Station No : 057004 Monthly mean flows
+ extremes & mean monthly flows (1957-1989)


Eden at Sheepmount
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1990
1991
1992
1993
Station No : 076007 Monthly mean flows
+ extremes & mean monthly flows (1967-1989)

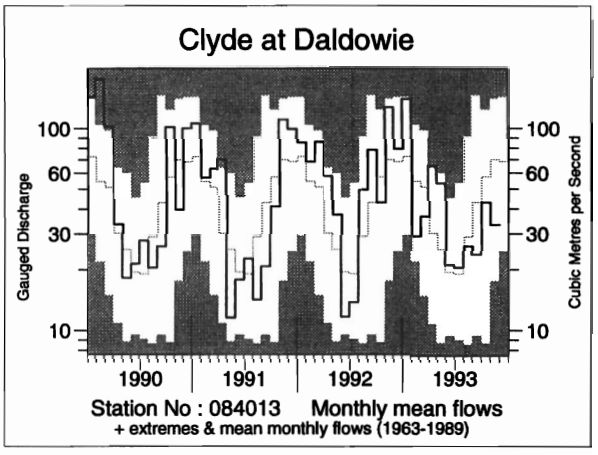

Clyde at Daldowie
Gauged Discharge
Cubic Metres per Second
100
60
30
10
1990
1991
1992
1993
Station No : 084013 Monthly mean flows
+ extremes & mean monthly flows (1963-1989)

TABLE 3 RUNOFF AS MM. AND AS A PERCENTAGE OF THE PERIOD OF RECORD AVERAGE WITH SELECTED PERIODS RANKED IN THE RECORD

River/ Station name	Jul 1993	Aug	Sep	Oct	Nov 1993		9/93 to 11/93		1/93 to 11/93		5/90 to 11/93		11/88 to 11/93	
	mm %LT	mm %LT	mm %LT	mm %LT	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs	mm %LT	rank /yrs
Dee at Park	23 82	24 75	50 122	172 218	33 43	2 /22	255 126	17 /21	814 117	18 /21	2597 94	8 /18	3632 89	3 /17
Tay at Ballathie	34 85	40 77	38 53	104 93	40 33	1 /42	182 60	3 /41	1089 110	30 /41	4129 106	27 /38	6534 114	32 /37
Whiteadder Water at Hutton Castle	11 88	8 53	13 83	73 267	21 56	9 /25	107 131	17 /25	348 101	13 /24	1282 96	8 /21	1627 80	5 /20
South Tyne at Haydon Bridge	32 116	39 101	73 145	51 75	33 36	2 /32	157 74	7 /30	652 100	13 /30	2531 95	9 /24	3641 92	4 /22
Wharfe at Flint Mill Weir	27 103	42 106	79 180	46 73	25 31	2 /39	150 80	12 /38	547 88	10 /38	2151 87	6 /35	3185 86	2 /34
Derwent at Buttercrambe	10 72	16 115	38 285	32 159	36 130	24 /33	106 170	30 /32	279 98	15 /32	869 78	5 /29	1172 70	1 /28
Trent at Colwick	17 107	12 73	21 126	40 172	33 108	23 /36	94 133	28 /35	274 89	13 /35	978 81	4 /32	1473 81	2 /31
Lud at Louth	11 71	9 69	11 102	32 276	32 230	24 /26	75 199	25 /26	213 92	11 /25	488 58	2 /22	723 56	1 /21
Witham at Claypole Mill	9 129	7 103	15 239	38 432	29 238	33 /35	82 286	33 /35	217 131	27 /34	548 89	10 /32	776 83	9 /30
Little Ouse at Abbey Heath	6 74	6 81	6 84	21 218	28 232	25 /26	55 185	24 /26	155 103	13 /25	379 67	2 /23	591 70	1 /21
Colne at Lexden	3 72	3 75	5 117	19 223	17 136	28 /35	41 156	29 /34	114 96	14 /34	329 74	4 /31	526 77	2 /30
Lee at Feildes Weir (natr.)	10 124	8 106	9 125	34 342	17 125	73 /109	60 193	99 /108	180 125	83 /107	419 76	19 /102	651 79	14 /99
Thames at Kingston (natr.)	11 116	8 91	13 145	32 239	19 88	55 /111	64 146	90 /111	242 113	70 /111	686 83	24 /108	1049 84	18 /106
Coln at Bibury	25 121	17 102	14 99	22 135	25 102	18 /31	61 112	19 /30	377 108	19 /30	1160 87	9 /27	1731 87	5 /26
Great Stour at Horton	10 71	9 68	10 74	32 159	23 85	16 /30	65 106	20 /29	210 82	9 /27	735 74	3 /22	1045 71	1 /18
Test at Broadlands	23 113	19 100	20 107	37 164	30 117	30 /37	87 130	31 /36	342 112	26 /35	956 83	3 /29	1404 83	2 /27
Piddle at Baggs Mill	18 101	15 97	19 126	48 237	41 143	24 /31	107 165	27 /30	406 113	21 /29	1179 87	6 /24	1744 84	3 /21
Exe at Thorverton	26 125	22 78	40 104	87 118	47 48	6 /38	175 83	18 /38	542 79	5 /37	2362 85	4 /35	3546 84	1 /33
Taw at Umberleigh	32 211	19 102	39 163	103 168	44 47	7 /36	185 103	21 /35	545 96	15 /35	2049 89	6 /32	3116 89	2 /31
Tone at Bishops Hull	13 86	9 74	16 106	23 86	25 58	11 /32	64 75	14 /33	297 74	4 /32	1190 76	1 /30	1936 80	1 /28
Severn at Bewdley	13 93	16 93	23 106	24 72	27 50	16 /73	75 69	22 /73	289 75	7 /72	1240 81	6 /70	1938 84	4 /68
Cynon at Abercynon	53 155	32 61	88 130	98 82	91 58	12 /36	277 80	14 /34	972 92	10 /34	4047 95	11 /28	6247 98	14 /27
Dee at New Inn	72 110	105 113	83 63	55 28	69 28	1 /25	206 37	1 /25	1089 71	1 /24	5248 83	1 /21	8016 86	1 /20
Eden at Sheepmount	24 91	36 120	31 73	31 43	25 29	1 /24	88 47	2 /23	533 90	7 /23	2296 98	8 /17	3475 100	7 /14
Clyde at Daldowie	29 107	37 91	32 55	60 74	45 46	4 /31	138 59	4 /30	683 102	15 /30	3077 114	25 /27	4542 115	24 /26
Carron at New Kelso	229 197	131 76	36 13	128 49	64 21	1 /15	228 29	1 /15	1830 83	5 /15	9057 101	7 /12	14228 109	9 /10
Ewe at Poolewe	211 249	164 145	41 21	87 39	71 26	1 /24	198 30	1 /23	1740 95	11 /23	8062 107	16 /20	12385 113	19 /19

Notes:

(i) Values based on gauged flow data unless flagged (natr.), when naturalised data have been used.

(ii) Values are ranked so that lowest runoff as rank 1.

(iii) %LT means percentage of long term average from the start of the record to 1992. For the long periods (at the right of this table), the end date for the long term is 1993.

TABLE 4 START-MONTH RESERVOIR STORAGES UP TO DECEMBER 1993

Area	Reservoir (R)/ Group (G)		Capacity● (Ml)	1993 July	Aug	Sep	Oct	Nov	Dec	1992 Dec
North West	Northern Command Zone[1]	(G)	133375	77	66	58	51	42	44	79
	Vyrnwy	(R)	55146	89	81	79	73	60	64	88
Northumbria	Teesdale[2]	(G)	87936	80	72	66	73	71	69	95
	Kielder	(R)	199175*	91*	90*	87*	84*	87*	80*	77*
Severn-Trent	Clywedog	(R)	44922	96	94	92	87	82	83	92
	Derwent Valley[3]	(G)	39525	76	77	76	84	83	79	95
Yorkshire	Washburn[4]	(G)	22035	81	72	63	67	68	59	89
	Bradford supply[5]	(G)	41407	80	74	74	90	86	76	83
Anglian	Grafham	(R)	58707	95	96	95	95	96	93	94
	Rutland	(R)	130061	96	93	90	86	88	88	96
Thames	London[6]	(G)	206232	94	96	87	86	92	88	96
	Farmoor [7]	(G)	13843	98	98	98	93	98	99	95
Southern	Bewl	(R)	28170	91	85	78	74	81	82	72
	Ardingly	(R)	4685	99	90	80	77	100	100	100
Wessex	Clatworthy	(R)	5364*	91	82	72	61	76	68	70
	Bristol W [8]	(G)	38666*	76*	67*	60*	48*	59*	60*	63*
South West	Colliford	(R)	28540	87	86	81	84	86	88	73
	Roadford	(R)	34500	82	81	74	76	81	78	85
	Wimbleball[9]	(R)	21320	89	83	76	74	80	82	71
	Stithians	(R)	5205	99	91	85	93	99	100	82
Welsh	Celyn + Brenig	(G)	131155	100	98	94	92	92	84	98
	Brianne	(R)	62140	98	97	92	91	91	95	100
	Big Five[10]	(G)	69762	89	86	78	80	80	84	91
	Elan Valley[11]	(G)	99106	97	96	97	97	95	99	100
Lothian	Edinburgh/Mid Lothian	(G)	97639	96	89	83	81	82	78+	100
	West Lothian	(G)	5613	99	89	81	87	98	100	95
	East Lothian	(G)	10206	99	92	81	85	98	87	91

● Live or usable capacity (unless indicated otherwise)

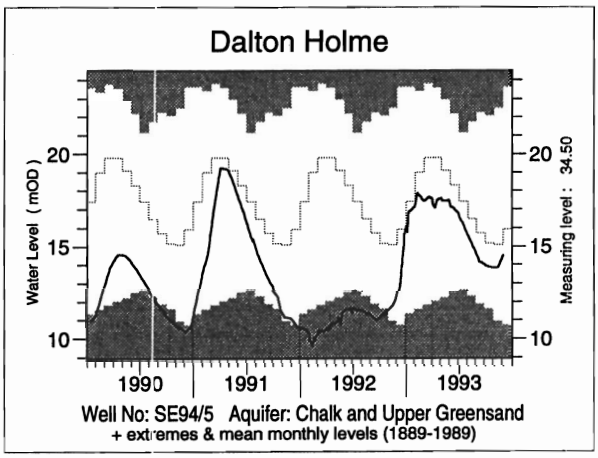
* Gross storage/percentage of gross storage

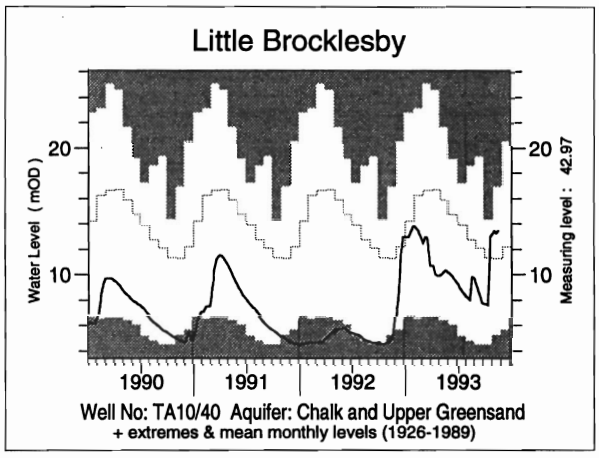
\+ Megget reservoir held at 75% capacity for repairs

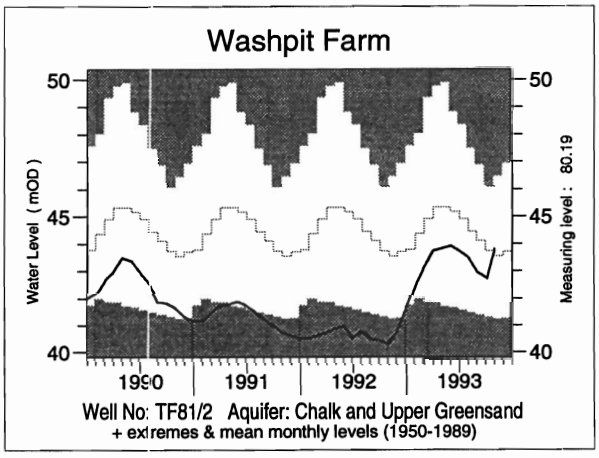
1. Includes Haweswater, Thirlmere, Stocks and Barnacre.
2. Cow Green, Selset, Grassholme, Balderhead, Blackton and Hury.
3. Howden, Derwent and Ladybower.
4. Swinsty, Fewston, Thruscross and Eccup.
5. The Nidd/Barden group (Scar House, Angram, Upper Barden, Lower Barden and Chelker) plus Grimwith.
6. Lower Thames (includes Queen Mother, Wraysbury, Queen Mary, King George VI and Queen Elizabeth II) and Lee Valley (includes King George and William Girling) groups - pumped storages.
7. Farmoor 1 and 2 - pumped storages.
8. Blagdon, Chew Valley and others.
9. Shared between South West (river regulation for abstraction) and Wessex (direct supply).
10. Usk, Talybont, Llandegfedd (pumped storage), Taf Fechan, Taf Fawr.
11. Claerwen, Caban Coch, Pen y Garreg and Craig Goch.

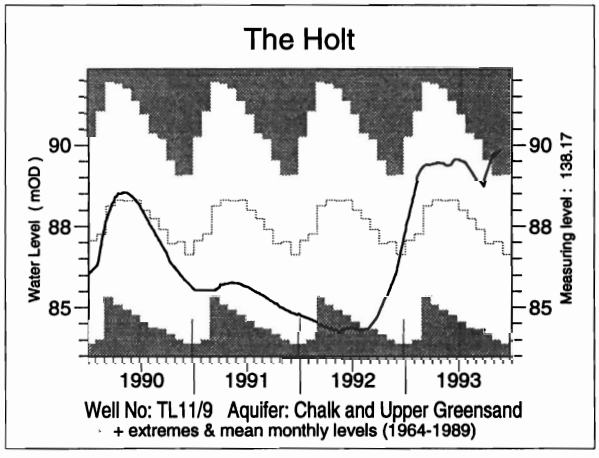
Note: Variations in storage depend on the balance between inputs (from catchment rainfall and any pumping) and outputs (to supply, compensation flow, HEP, amenity). There will be additional losses due to evaporation, especially in the summer months. Operational strategies for making the most efficient use of water stocks will further affect reservoir storages. Table 4 provides a link between the hydrological conditions described elsewhere in the report and the water resources situation.

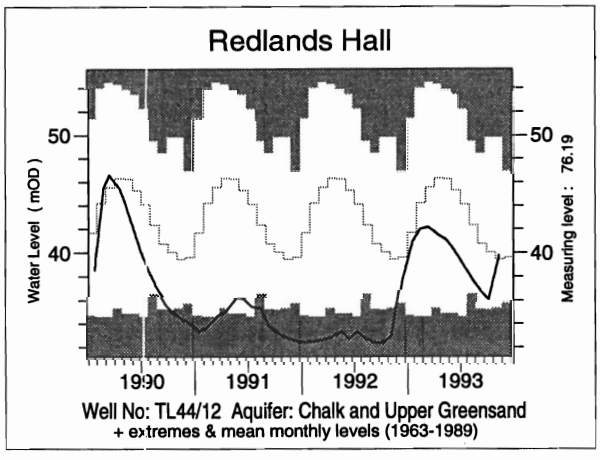
FIGURE 2 GROUNDWATER LEVEL HYDROGRAPHS

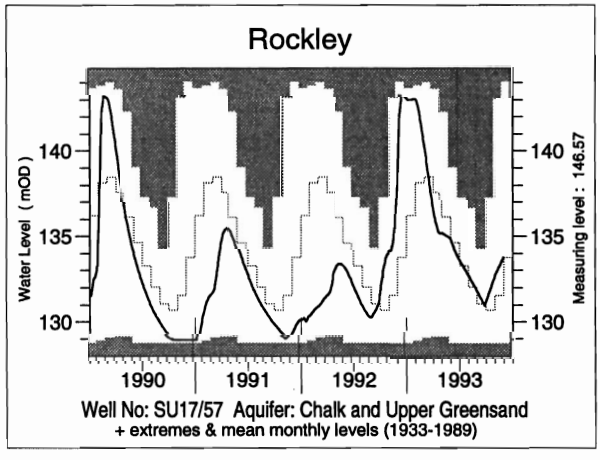


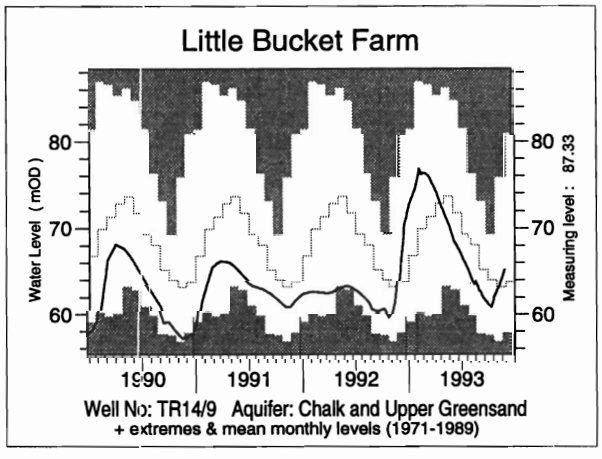


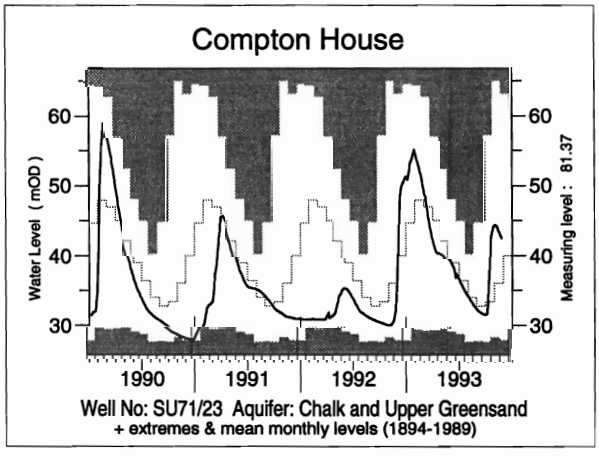


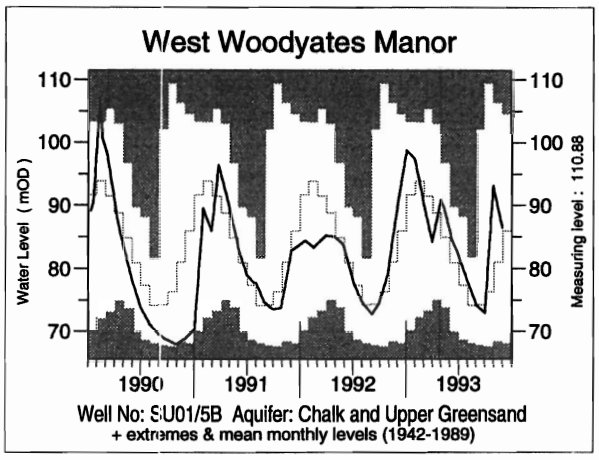


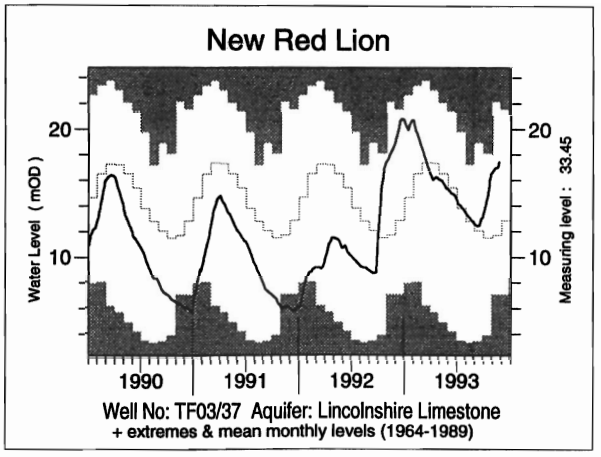


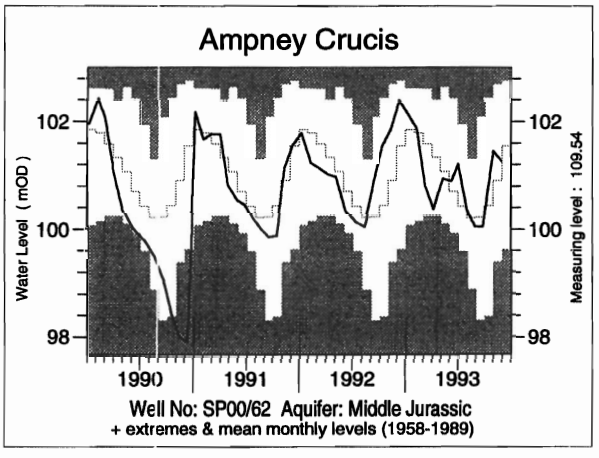


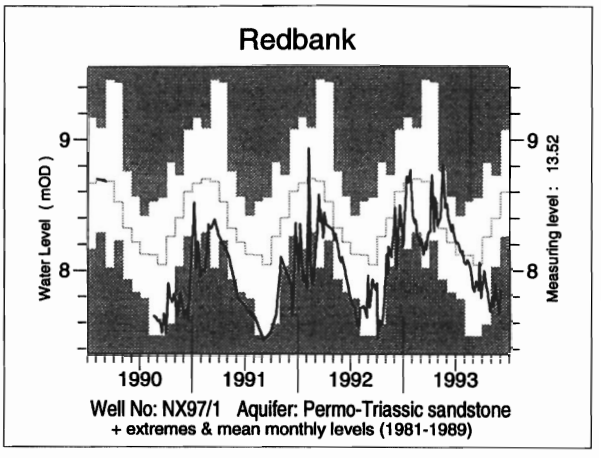


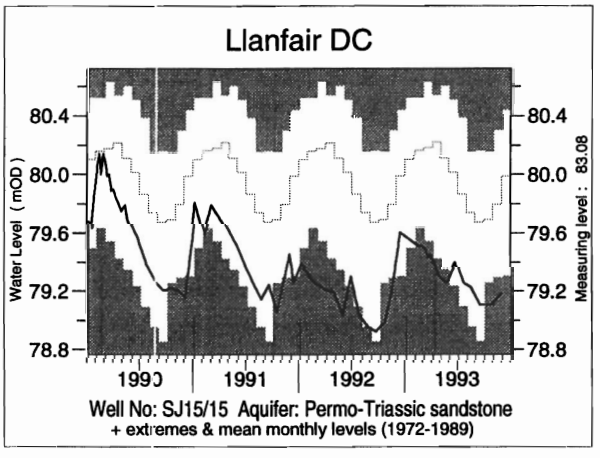


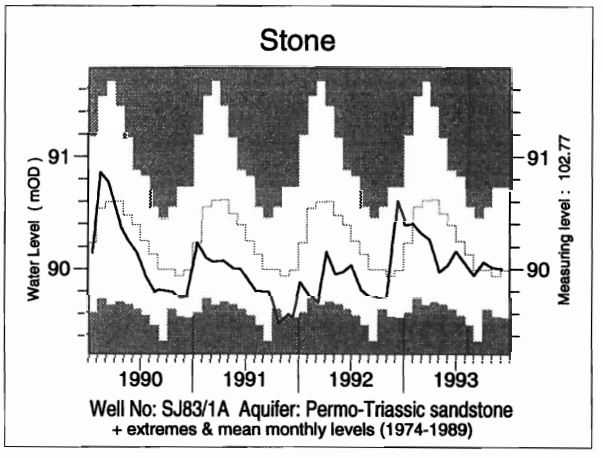

West Woodyates Manor
Water Level (mOD)
Measuring level : 110.88
110
100
90
80
70
1990
1991
1992
1993
Well No: SU01/5B Aquifer: Chalk and Upper Greensand
+ extremes & mean monthly levels (1942-1989)

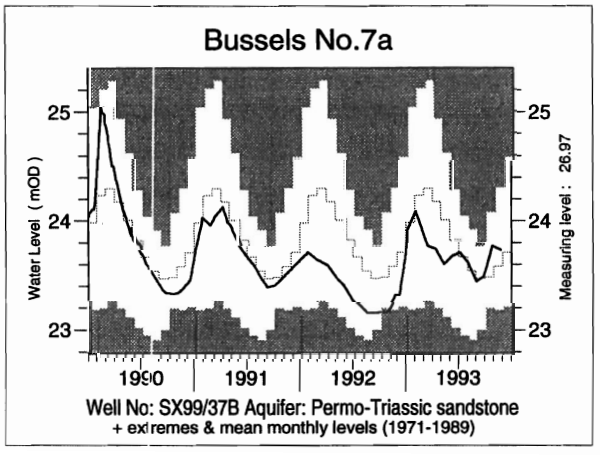

New Red Lion
Water Level (mOD)
Measuring level : 33.45
20
10
1990
1991
1992
1993
Well No: TF03/37 Aquifer: Lincolnshire Limestone
+ extremes & mean monthly levels (1964-1989)


Ampney Crucis
Water Level (mOD)
Measuring level : 109.54
102
100
98
1990
1991
1992
1993
Well No: SP00/62 Aquifer: Middle Jurassic
+ extremes & mean monthly levels (1958-1989)


Redbank
Water Level (mOD)
Measuring level : 13.52
9
8
1990
1991
1992
1993
Well No: NX97/1 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1981-1989)


Llanfair DC
Water Level (mOD)
Measuring level : 83.08
80.4
80.0
79.6
79.2
78.8
1990
1991
1992
1993
Well No: SJ15/15 Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1972-1989)


Stone
Water Level (mOD)
Measuring level : 102.77
91
90
1990
1991
1992
1993
Well No: SJ83/1A Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1974-1989)


Bussels No.7a
Water Level (mOD)
Measuring level : 26.97
25
24
23
1990
1991
1992
1993
Well No: SX99/37B Aquifer: Permo-Triassic sandstone
+ extremes & mean monthly levels (1971-1989)

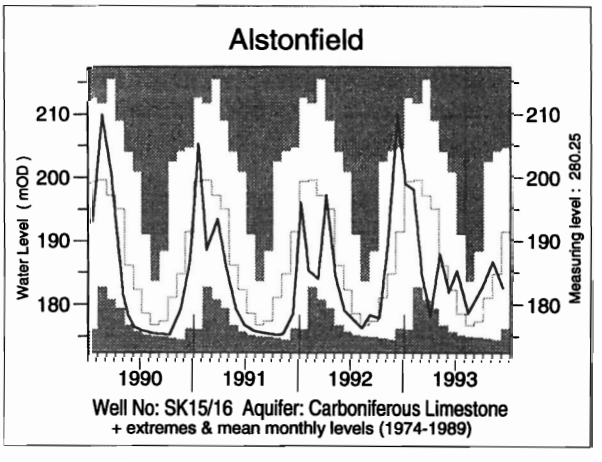

Alstonfield
Water Level (mOD)
Measuring level : 280.25
210
200
190
180
1990
1991
1992
1993
Well No: SK15/16 Aquifer: Carboniferous Limestone
+ extremes & mean monthly levels (1974-1989)

TABLE 5 A COMPARISON OF NOVEMBER GROUNDWATER LEVELS: 1992 AND 1993

Site	Aquifer	Records commence	Average November level	November 1992		Nov/Dec 1993		No of years Nov level <1993	Least pre-1993 level
				day	level	day	level		any month
Wetwang	C & UGS	1971	20.15	27/11	20.65	30/11	22.16	>10	16.66
Dalton Holme	C & UGS	1889	15.04	27/11	12.10	30/11	14.51	>10	9.64
Little Brocklesby	C & UGS	1926	10.69	24/11	5.28	16/11	13.47	>10	4.53
Washpit Farm	C & UGS	1950	43.43	02/11	40.30	01/12	44.32	>10	40.30
The Holt	C & UGS	1964	86.84	02/11	85.44	29/11	89.87	>10	83.90
Therfield Rectory	C & UGS	1883	78.24	01/11	dry	29/11	77.77	>10	dry <71.6
Redlands Hall	C & UGS	1964	38.73	13/11	32.90	12/11	39.81	>10	32.29
Rockley	C & UGS	1933	131.60	29/11	138.04	29/11	133.75	>10	dry <128.9
Little Bucket Farm	C & UGS	1971	62.46	23/11	61.95	26/11	65.19	>10	56.77
Compton House	C & UGS	1894	35.59	25/11	32.06	25/11	42.42	>10	27.64
Chilgrove House	C & UGS	1836	45.05	25/11	45.53	25/11	50.36	>10	33.46
West Dean No.3	C & UGS	1940	1.76	27/11	1.97	26/11	1.60	>10	1.01
Lime Kiln Way	C & UGS	1969	124.82	04/11	123.70	30/11	124.57	6	123.70
Ashton Farm	C & UGS	1974	65.82	30/11	66.52	29/11	68.99	>10	63.10
West Woodyates Manor	C & UGS	1942	79.67	30/11	89.95	29/11	86.40	>10	67.62
New Red Lion	LLst	1964	11.67	24/11	18.42	22/11	17.37	>10	3.29
Ampney Crucis	Mid Jur	1958	101.22	12/11	102.35	29/11	101.58	>10	97.38
Yew Tree Farm	PTS	1973	13.51	30/11	13.41	30/11	13.57	>10	8.43
Llanfair D.C	PTS	1972	79.78	10/11	79.20	26/11	79.18	0	78.85
Morris Dancers	PTS	1969	32.53	18/11	31.88	09/11	32.02	3	30.87
Stone	PTS	1974	90.02	03/11	89.74	06/12	90.00	>10	89.34
Skirwith	PTS	1978	129.87	30/11	129.68	30/11	129.90	6	129.44
Redbank	PTS	1981	8.29	29/11	8.33	01/12	7.84	1	7.45
Bussels No.7A	PTS	1972	23.57	24/11	23.32	25/11	23.73	>10	22.90
Rushyford NE	MgLst	1967	71.58	30/11	74.57	30/11	76.30	>10	64.77
Peggy Ellerton	MgLst	1968	34.12	09/11	31.26	04/11	31.98	2	31.10
Alstonfield	CLst	1974	186.07	04/11	189.74	06/12	182.31	9	174.22

groundwater levels are in metres above Ordnance Datum

C & UGS	Chalk and Upper Greensand	Mid Jur	Middle Jurassic limestones
LLst	Lincolnshire Limestone	MgLst	Magnesian Limestone
PTS	Permo-Triassic sandstones	CLst	Carboniferous Limestone

FIGURE 3 LOCATION MAP OF GAUGING STATIONS AND GROUNDWATER INDEX WELLS